The Budding of fruit trees

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ALTHOUGH the principles of budding and grafting are basically the same—that is, the success depends upon the close contact of the cambium layers of both stock and scion—the operations are performed at different times of the year.

Grafting is carried out in the spring just prior to or immediately after sap movement whereas budding is performed during the summer months or when the stocks are in full growth.

Of the various methods used in propagating and reworking fruit trees, perhaps budding can be classed as one of the most interesting. This is mainly due to the fact that it is a quick and simple operation and can be performed with good results by persons who have a limited knowledge of the principles of plant growth.

Budding is the best and safest method to use when reworking stone fruits and citrus trees and particularly when propa-
gating young nursery trees of the above varieties.

It has also been successfully employed in changing over to another variety both young and old apple trees by inserting the buds into the base of new lateral growth after the tree had been skeletonised during the dormant season.

One of the main advantages that budding has over grafting is that it obviates the necessity to make large saw cuts when preparing the stocks and consequently lessens the chances of infection by spores of wood-rotting fungi.

**TERMS USED**

**Budstick.**—A shoot of the current year's growth from the parent tree, containing a number of mature buds.

**Parent Tree.**—The tree from which the budsticks are obtained.

**Stock.**—The rooted section of a tree or seedling in which the bud is inserted.

**Cambium.**—The growing tissue which is located between the bark and the wood of both the stock and budstick.

**Rework.**—To change the variety of a tree other than a seedling by budding or grafting.

**SELECTION OF BUDSTICK**

Budsticks containing well-developed mature buds are selected from the current year's growth. They can usually be found towards the outside edge of the tree or near the top where there is adequate light and air penetration for proper development. Budsticks taken from the interior of the tree are usually unsuitable and immature.

It is very important that the trees from which the budsticks are obtained are free from virus diseases or other disorders and that they produce fruit of good quality and true to the variety. When trees are in full growth the experienced grower or nurseryman can detect any variation in the normal growth and fruit characteristics of the parent trees and wherever a fault occurs the tree must be discarded as a source of budwood selection.

Avoid obtaining budwood from trees which show the following symptoms:

<table>
<thead>
<tr>
<th>Variety</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple</td>
<td>Mottling of leaves (Apple Mosaic), Malformation of fruit, dimpling, etc.</td>
</tr>
<tr>
<td>Pears</td>
<td>Pitting and general malformation of fruit (Stony Pits)</td>
</tr>
<tr>
<td>Stone Fruits</td>
<td>Splitting and gumming of limbs, flattening of limb in split region (Bacterial Canker)</td>
</tr>
<tr>
<td>Citrus</td>
<td>Obtain buds only from old and healthy trees which have produced regular crops of good quality fruit. Virus diseases of citrus trees often do not show up until trees are aged</td>
</tr>
</tbody>
</table>

The most suitable budsticks for citrus are the ones which are round, fairly well matured and about the thickness of a lead pencil. Young angular budsticks are undesirable.

**TIME TO BUD**

Citrus trees can be budded immediately after a growth period. In this State, growth periods take place during the spring and summer months, October-December and March-April.

In the nursery, buds which have been inserted during the spring and early summer months can be forced by loosening the tie and cutting off the portion of the stock above the bud, but not until the bud has shown unmistakable signs of having taken. As the subsequent new growth from the bud develops it must be tied periodically to a stake which previously should have been driven into the soil beside the young tree for this specific purpose.

Neglect of this important work invariably results in breakages at the union by wind.

Buds inserted during the March-April period should remain dormant until the following spring. To prevent the stem from constricting at the union however, it is important that the tie material be cut on the opposite side to the bud after the bud has taken in approximately three weeks. The top portion of the stock is not cut off until just prior to the flush of growth in the spring.

**Apples, Pears and Stone Fruits** are budded during February-March. In every instance the bark must lift away freely from the wood of the stock it is intended to bud and this is assisted by adequate
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watering approximately 24 hours before the operation commences. If the bark does not lift freely, damage to the cambium results and consequently failures are inevitable.

**Fig. 2.** Budding equipment (a) Secateurs for removing budsticks from parent trees; (b) Pocket carborundum stone; (c) Two types of budding knives; (d) Roll of plastic tape for tying buds. Other suitable materials are rubber strips and raffia.

**CARE OF BUDSTICKS**

The care of budsticks differs considerably from that of scion wood for grafting which can be kept for a considerable period in cold storage or other suitable...
A good deal depends on the distance and number of trees involved as to whether or not budsticks should be kept any length of time.

Storage is unavoidable where long distances are involved, but usually the material is readily available close at hand and in such instances only sufficient for one day's work should be collected. Where storage is essential the budsticks should be wrapped in damp (not wet) newspaper and then placed in polythene bags, labelled and kept in the refrigerator.

In all instances the budsticks are prepared for use by immediately removing all leaves, cutting through the leaf stems or petioles and leaving just sufficient attached to the budsticks for the operator to use as a handle when inserting the bud into position on the stock.

The best buds are usually located in the middle of the budstick as those near the terminal and basal ends are immature and should be discarded.

A convenient and satisfactory method of keeping the budsticks fresh while the work is being carried out is to place them upright in a bucket containing a little water. This can be carried from tree to tree and placed in a convenient position in the shade and the budsticks removed as required.

Alternatively they may be wrapped in damp, but not wet, bags or cloth.

**PREPARATION OF STOCK**

There are various ways in which budding can be performed, but the most popular and simple method is the "T" or "inverted T" method. The incision is made at the base of the stock, by drawing the blade of the knife upwards for approximately one inch and then by a transverse or cross cut at the top or bottom. Care must be taken to see that only sufficient weight is on the knife blade to cut the bark so that it can be lifted freely from the wood and also to prevent any undue damage to the cambium layer.
The bark at the junction of the cuts can be lifted slightly by a twist of the knife blade and the flaps are then opened by reversing the knife and sliding the bevelled bone end between the bark and wood.

**CUTTING THE BUDS**

The budstick is held with the buds facing the operator. It is supported by placing the index finger of the left hand directly under the bud it is intended to remove. The bud is then cut from the budstick by a slicing movement of the blade, commencing approximately one inch below the bud and finishing approximately half an inch in front. The cut should be made deep enough to show a sliver of wood adhering to the bark when removed. Experienced operators generally remove the sliver of wood, but good results can also be obtained if it is left in before insertion.

**INSERTING THE BUD**

The bud is then placed in position by holding the stem end attached to it with the thumb and fore-finger and sliding it between the bark and wood where the incision was made in the stock. Callusing will be assisted if the top end of the bud is placed hard up to the bark at the junction of the T cut.

The operation is completed by binding or wrapping the bud firmly with raffia, rubber strips, or plastic tape, leaving the eye of the bud exposed.

**AFTERCARE**

If the work has been carefully carried out a good union should result in approximately three weeks. This is noticeable by the abscission of the petiole and the healthy appearance of the bud itself.

To prevent a restriction of the normal growth of the stock at the point of union, the blade of the knife is then drawn through the binding material on the opposite side to where the bud was inserted in the stocks, but the material is not removed. The buds should then remain dormant until the following spring when that portion of the stock above the bud is removed allowing the bud to shoot and continue to grow.

The growing tips of vigorous young nursery trees are sometimes pinched out at approximately knee height to encourage the development of side shoots. When dug from the nursery rows these are then referred to as headed trees while those which have not been pinched back and have not developed side shoots are referred to as whips.
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